

DUCKS UNLIMITED
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QUANTITIES

MOBILIZATION	1 L.S.
SITE PREPARATION	1 L.S.
EMBANKMENT CONSTRUCTION	3,200 C.Y.-P*
WATER CONTROL STRUCTURE INSTALLATION	
60"Ø RCP MANHOLE 15' HEIGHT	1 EA.
TRASH RACK	1 LS
CULVERT INSTALLATION	
30"Ø RCP	92 L.F.
30"Ø FLARED END SECTION	1 EA.
RIPRAP, REVETMENT, AGGREGATE PLACEMENT	
CLASS II (RISER/PLUNGE POOL)	90 C.Y.-P*
SAND (CHIMNEY DRAIN/OUTLET PIPE)	66 C.Y.-P*
EMBANKMENT FACE REPAIR	
EMBANKMENT RESLOPING	300 L.F.
EMBANKMENT FILL	200 C.Y.-A**
CLASS II ROCK RIPRAP	130 L.Y.-A**
REMOVAL OF EXISTING STRUCTURES AND CULVERTS	1 L.S.

SEEDING WILL BE RESPONSIBLE OF OTHERS

CONTRACTOR IS RESPONSIBLE FOR ABIDING BY ALL STATE LAWS, REGULATIONS, AND OBTAIN ALL NECESSARY PERMITS REGARDING SEDIMENT AND POLLUTION CONTROL.

IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN UTILITY CLEARANCES.

*(CY-P) - PAYMENT MADE ON A PLAN QUANTITY BASIS. EMBANKMENT QUANTITY INCLUDES 15% FOR SHRINKAGE

**(CY-A) - PAYMENT MADE ON A ACTUAL QUANTITY EITHER BY FIELD MEASUREMENT OR AGREEMENT WITH CONTRACTOR

DUCKS UNLIMITED

PROJECT

SCHILLINGER WETLAND REPAIR

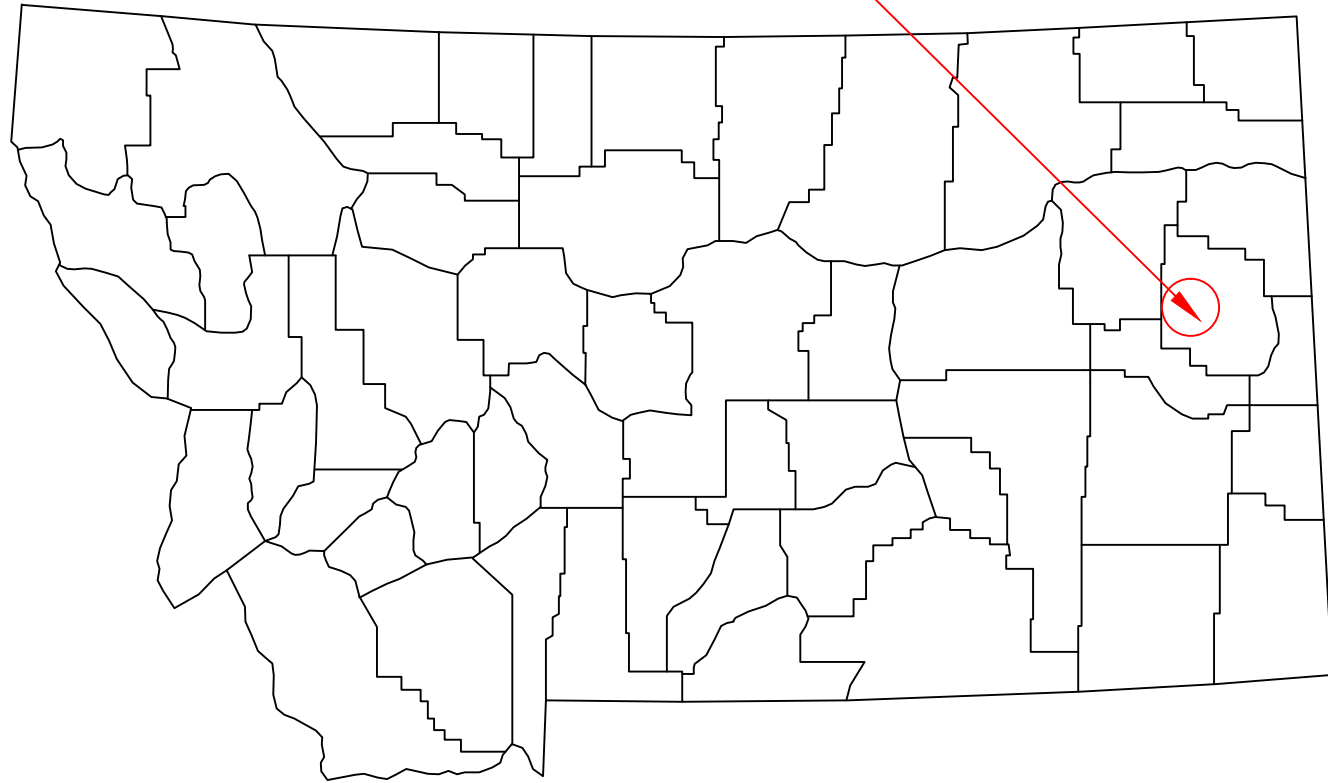
SECTION 9, TOWNSHIP 23N, RANGE 50E

DAWSON COUNTY, MT

IN COOPERATION WITH

MONTANA FISH, WILDLIFE, AND PARKS

PROJECT LOCATION



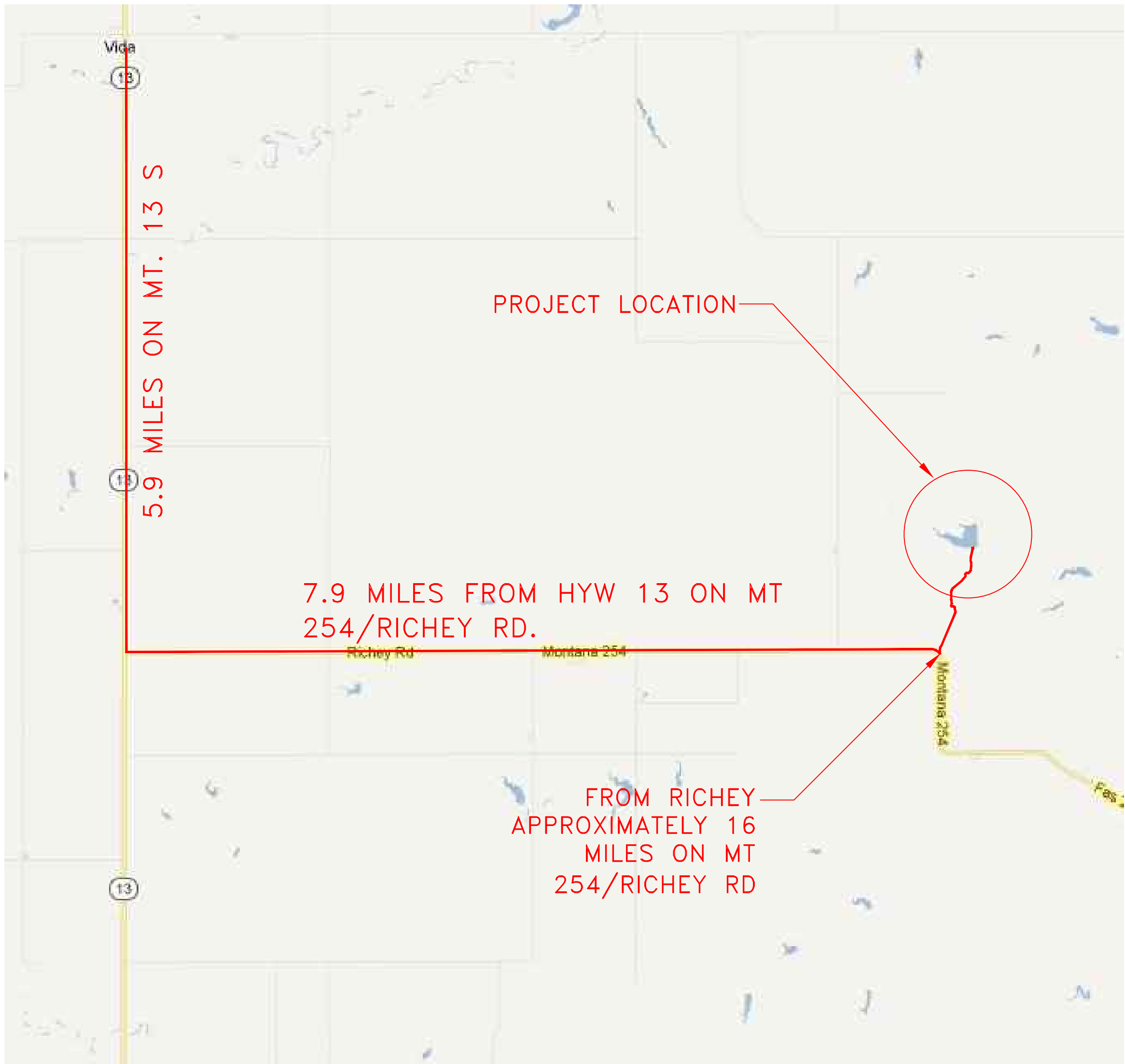
MONTANA



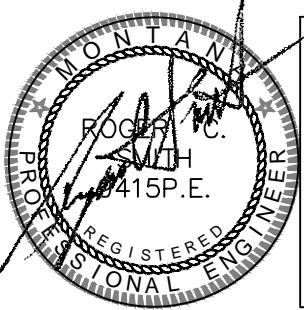
VICINITY MAP
SCALE: 1"=1000'

PROJECT IS LOCATED 8 MILES EAST AND 5 MILES SOUTH OF VIDA, MT

PROJECT LOCATION



LOCATION MAP
SCALE: NONE



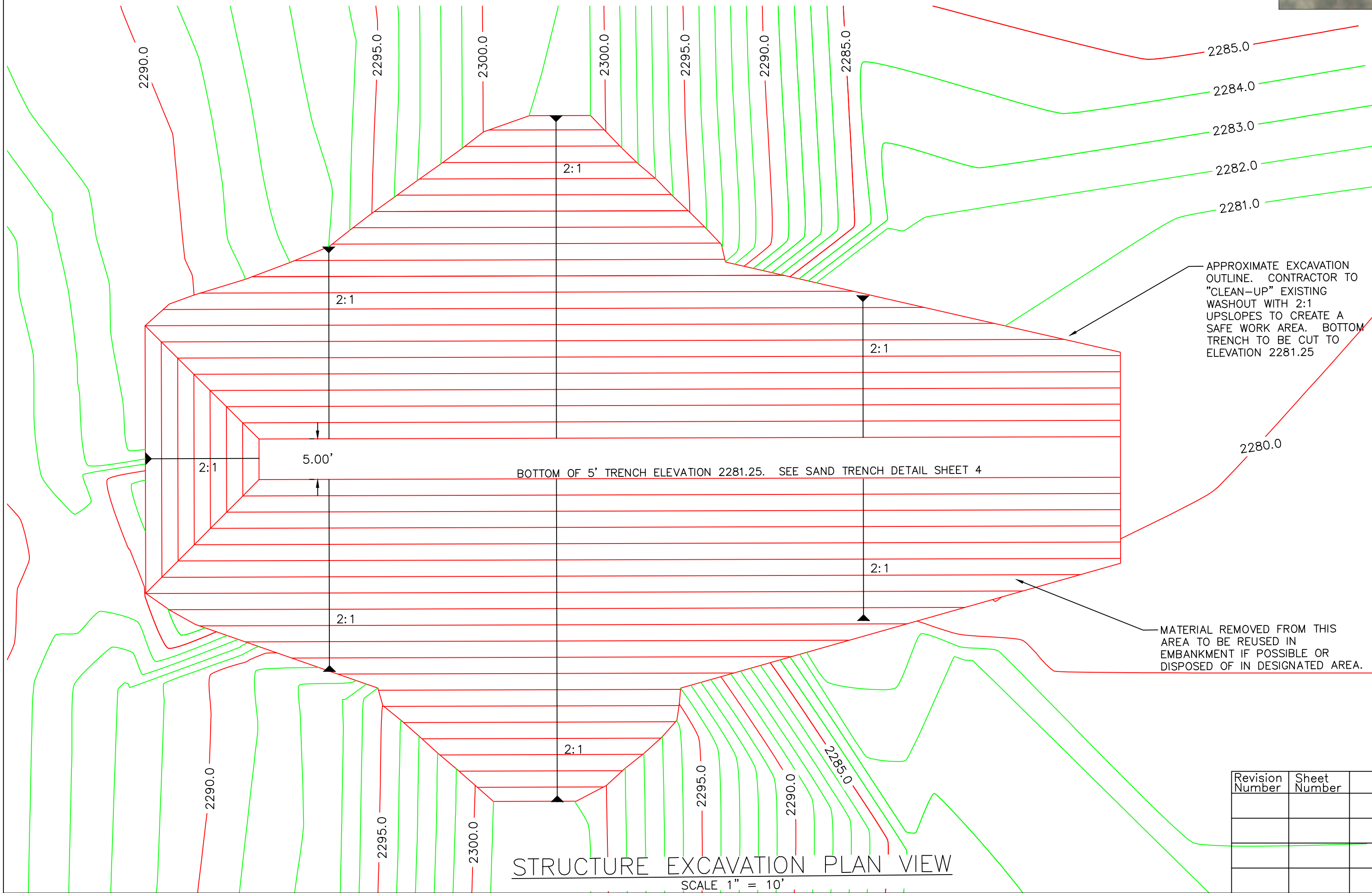
I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Montana.
Roger C. Smith Name March 14, 2013 Date
My license# 9415 will expire on June 30, 2014
Pages or sheets covered by the seal: Sheets 1-4

 GREAT PLAINS REGIONAL OFFICE DATE: 1/31/2013 SHEET NO. 1 OF 4	PROJECT NO. MT 147-2 SCHILLINGER WETLAND REPAIR	DESIGNED BY: RCS
	LOCATION & VICINITY MAPS	DRAWN BY: DRW
	APPROVED BY:	SURVEYED BY: TRE
		CHECKED BY:



WASHED OUT AREA LOOKING NORTH.

ELEV	AREA ACRES	ACCUMULATIVE ACRE-FEET	Comments
2282.0	0.0	0.00	Lowest basin el. Found - 2281.58
2283.0	0.1	0.03	
2284.0	0.2	0.14	
2285.0	3.1	1.65	
2286.0	52	583	
2287.0	7.7	1231	
2288.0	10.3	21.31	
2289.0	13.6	33.22	
2290.0	16.8	48.39	
2291.0	19.8	66.68	
2292.0	23.5	88.33	
2293.0	27.0	113.58	
2294.0	31.6	142.86	Full Service Level
2295.0	42.8	180.04	
2296.0	45.2	224.04	Natural ES 2296.3-2296.5
2297.0	48.0	270.64	
2298.0	51.0	320.14	ESTIMATED
2299.0	54.0	372.64	ESTIMATED
2300.0	58.5	428.87	ESTIMATED



EMBANKMENT RE-FACING:

AN UNDETERMINED PORTION OF THE UPSTREAM FACE OF THE EMBANKMENT NEEDS A RE-SLOPING AND FILL EFFORT. THE REPAIRED AREA AND POTENTIALLY UN-REPAIRED AREAS WILL REQUIRE ROCK RIP-RAP. FOR BIDDING PURPOSES IT IS ESTIMATED THAT 300 L.F. OF THE EMBANKMENT FACE WILL BE RE-SLOPED. FILL NEEDED TO ACCOMPLISH THE RE-SLOPING WILL BE PAID FOR BASED ON AN ACTUAL QUANTITY AS DETERMINED EITHER BY MEASUREMENT OR BY AGREEMENT WITH THE CONTRACTOR AND ENGINEER. FOR BID PURPOSES THE ESTIMATED BORROW REQUIRED IS 200 C.Y. THE ACTUAL VOLUME OF ROCK RIP-RAP SHALL BE DETERMINED BY THE ENGINEER BUT FOR BID PURPOSES WILL BE ESTIMATED TO BE 130 C.Y. ALL ROCK RIP-RAP SHALL BE PLACED ON FILTER FABRIC AS SPECIFIED IN SPECIFICATION 305. THE CONTRACTOR SHOULD NOT PURCHASE/SUPPLY ROCK FOR EMBANKMENT FACE PROTECTION UNTIL A QUANTITY HAS BEEN DETERMINED IN THE FIELD.

EXISTING RISER, TRASHRACK, AND CMP TO BE REMOVED. ADDITIONAL PIPE HAS BEEN DISPLACED DOWNSTREAM AND IS NOT SHOWN IN THIS PHOTO, CONTRACTOR IS RESPONSIBLE FOR THAT PIPE ALSO.

REMOVAL OF EXISTING STRUCTURES NOTE:


THE EXISTING 60"Ø CMP RISER, 30"Ø CMP OUTLET PIPE, AND ASSOCIATED HARDWARE SHALL BE REMOVED AND DISPOSED OF OFF-SITE. SUCH MATERIAL SHALL BECOME PROPERTY OF THE CONTRACTOR FOR PROPER DISPOSAL OFF-SITE. ANY OTHER WASTE MATERIAL IDENTIFIED BY DU FIELD ENGINEER SHALL ALSO BE REMOVED AND DISPOSED OF OFF-SITE. PAYMENT FOR EXCAVATION, REMOVAL, HAULING, AND DISPOSAL SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "REMOVAL OF EXISTING STRUCTURES."

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EXISTING STRUCTURE IN WASHED OUT AREA.
CONTRACTOR TO REMOVE AND DISPOSE OF OFF-SITE

Revision Number	Sheet Number	Revisions	Date	By



**DUCKS
UNLIMITED
INC.**
GREAT PLAINS REGIONAL OFFICE
DATE: 01/03/2013

PROJECT NO. MT 147-2
SCHILLINGER WETLAND
TOPOGRAPHY AND STRUCTURE
EXCAVATION

APPROVED BY: .
APPROVED BY:

DESIGNED BY: RCS
DRAWN BY: DRW
SURVEYED BY: TRE
CHECKED BY: .

SITE PREPARATION NOTE:

TOPSOIL SHALL BE STRIPPED FROM AREAS OUTSIDE OF THE STRUCTURE EXCAVATION LINE AND STOCKPILED PRIOR TO INSTALLATION OF PIPE. UPON COMPLETION OF PIPE INSTALLATION AND COMPACTED EMBANKMENT FILL, CONTRACTOR SHALL PLACE MIN. 4" TOPSOIL OVER COMPLETED EMBANKMENT SLOPES. ANY ADDITIONAL TOPSOIL SHALL BE PLACED ALONG DOWNSTREAM SLOPES TO FLATTEN AND THICKEN SUCH. THE CONTRACTOR SHALL LEVEL ALL TOPSOIL SUITABLE ENOUGH FOR SEEDING & MULCHING. PAYMENT FOR STRIPPING, STOCKPILING, AND PLACEMENT IS CONSIDERED "INCIDENTAL" TO SITE PREPARATION.

EMBANKMENT/BORROW AREA NOTE:

MATERIAL (EXCEPT TOPSOIL) FROM THE EXISTING EMBANKMENT WITHIN THE EXCAVATION AREA SHALL BE STOCKPILED FOR USE AS BACKFILL. EXCAVATION SHALL BE INCIDENTAL TO "EMBANKMENT CONSTRUCTION". BACKFILL OPERATIONS SHALL ADHERE TO SPECIFICATION 204--"EMBANKMENT CONSTRUCTION" AND BE PAID FOR AS "EMBANKMENT CONSTRUCTION". THE BORROW AREA SHALL BE BLENDED INTO THE EXISTING LANDSCAPE TO THE EXTENT POSSIBLE, AND BE COVERED WITH MIN. 4" TOPSOIL AND HAVE A FINISH SUITABLE FOR SEEDING & MULCHING UPON COMPLETION. COHESIVE EMBANKMENT MATERIAL (3,200 C.Y.-P INCLUDES 15% FOR SHRINKAGE SHALL COME FROM ON-SITE BORROW AS APPROVED BY AGENCY/DU FIELD ENGINEER. MATERIAL WILL BE PLACED AND COMPACTED AS DESCRIBED IN EMBANKMENT SPECIFICATION 204. FINISHED SLOPES SHALL BE 3:1 OR FLATTER. FINISHED SLOPES ON BORROW AREA SHALL BE 4H:1V OR FLATTER OR AS APPROVED BY DU FIELD ENGINEER. THE BORROW AREA SHALL BE BLENDED INTO THE EXISTING LANDSCAPE TO THE EXTENT POSSIBLE, AND BE COVERED WITH MIN. 4" TOPSOIL AND HAVE A FINISH SUITABLE FOR SEEDING & MULCHING UPON COMPLETION. PAYMENT FOR EMBANKMENT CONSTRUCTION: MATERIAL, HAULING, PLACING, AND COMPACTING SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "EMBANKMENT."

6" TOPSOIL SHALL BE STRIPPED EXISTING EMBANKMENT WHERE EXCAVATION OF THE EXISTING EMBANKMENT IS REQUIRED IN THE BREACH AREA. UPON COMPLETION OF EMBANKMENT FILL, CONTRACTOR SHALL PLACE MIN. 4" TOPSOIL OVER COMPACTED TOP AND 3:1 SIDE SLOPES.

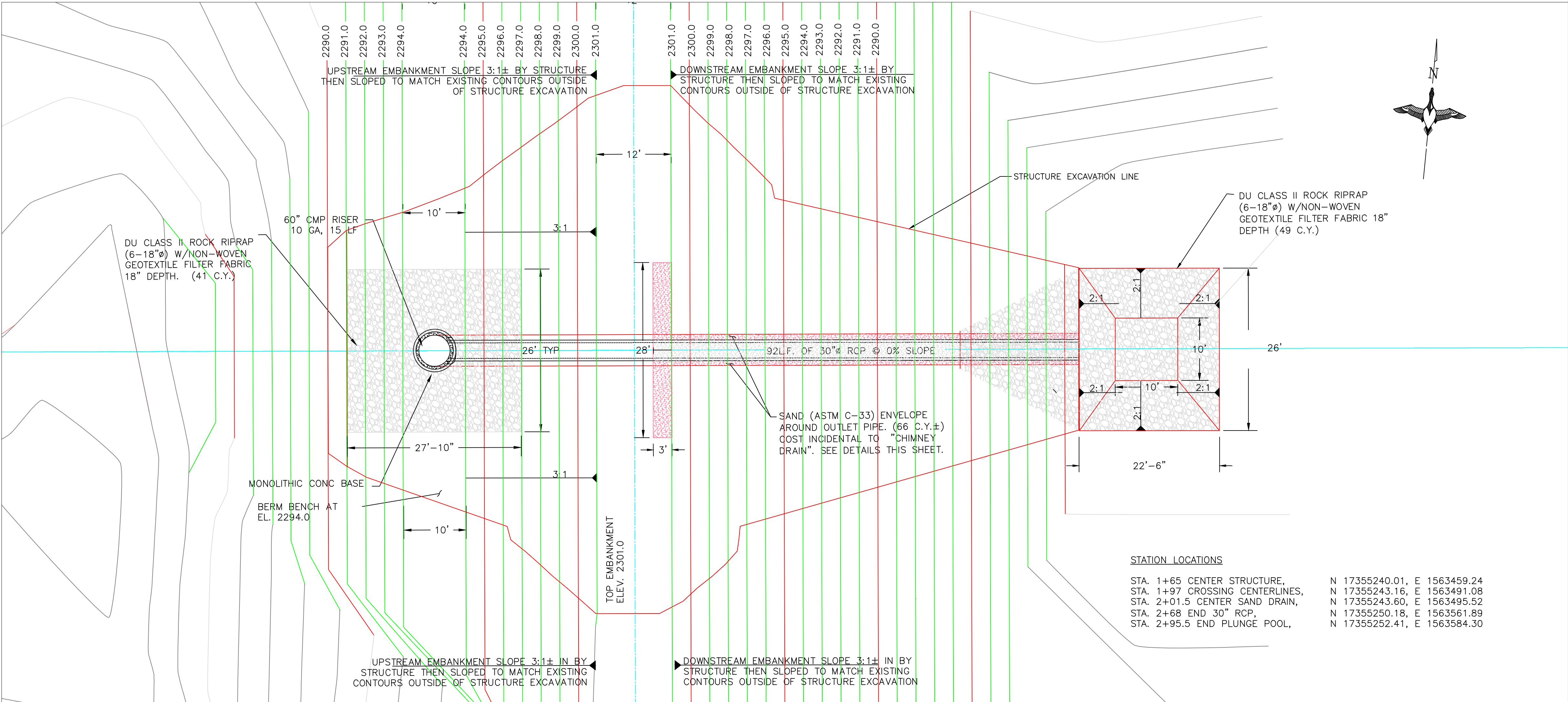
30" Ø RCP INSTALLATION:

CONTRACTOR SHALL INSTALL 94 LINEAL FEET OF 30"Ø RCP PIPE AND 8'-2" LONG FLARED END SECTION, FOR TOTAL LENGTH OF 102.17 L.F. @ SLOPE OF 0.00%. CONTRACTOR SHALL EXCAVATE 5' WIDE TRENCH 1.5' BELOW RCP PIPE FOR SAND ENVELOPE MATERIAL, (ASTM C-33), AS SHOWN THIS SHEET. SAND MATERIAL SHALL BE COMPACTED TO 95% OF A STANDARD PROCTOR. CONTRACTOR SHALL PLACE SAND MATERIAL IN 6" LIFTS FROM BOTTOM OF 30"Ø RCP PIPE TO SPRING-LINE OF PIPE AND COMPACTED WITH WHACKER TAMPERS OR APPROVED METHODS. CONTRACTOR WILL BE REQUIRED TO COMPACT MATERIAL FROM EDGE OF PIPE TO EDGE OF TRENCH, PERIODI ANY LIFTS EXCEEDING 6" WITH BE REMOVED AND REINSTALLED @ THE CONTRACTORS EXPENSE. REMAINING BACK FILL MATERIAL SHALL BE PLACED IN ACCORDANCE TO DU SPECIFICATION 204. EYE BOLT TIE RODS ARE REQUIRED PER EACH SECTION OF PIPE, CONTRACTOR WILL NEED TO INSTALL ALONG INSIDE OF PIPE DUE TO FEMALE BELL SECTION. TIE RODS WITHOUT WASHERS AND NUTS ARE NOT ACCEPTABLE. CONTRACTOR WILL BE REQUIRED TO EXCAVATE A 2:1 SLOPE FROM ELEVATION 2279.0 TO TOP OF EXISTING EMBANKMENT. MATERIAL REQUIRED TO FILL SUCH VOID IS CONSIDERED "INCIDENTAL" TO WATER CONTROL STRUCTURE INSTALLATION.

PAYMENT FOR MATERIALS, EXCAVATION, AND INSTALLATION OF SUCH SHALL BE PAID FOR BASED ON THE CONTRACTORS UNIT BID PRICE FOR "30"Ø RCP PIPE."

SEEING & MULCHING NOTE:

THE CONTRACTOR SHALL PROVIDE A FINAL FINISH SUITABLE FOR SEEDING ON ALL DISTURBED AREAS, AS DIRECTED BY THE DU FIELD ENGINEER. THE USDA-FOREST SERVICE SHALL PROVIDE THE SEEDING,



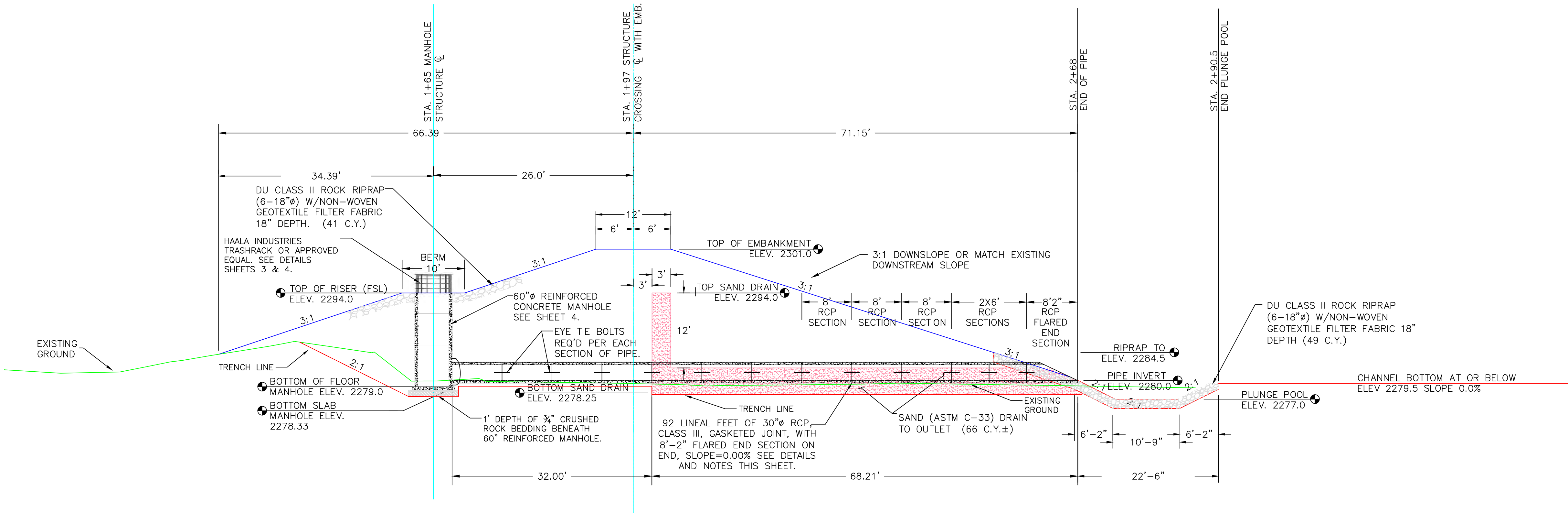
PLAN VIEW RCP PIPELINE

SCALE 1"=10'



HAALA INDUSTRIES
1201 HWY 4 SOUTH
P.O. BOX 389
SLEEPY EYE, MN
507-794-5821
WWW.HAALA.COM

SHOWN IS A HAALA INDUSTRIES ITEM #GG60,
GRETA GRATES GALVANIZED. CONTRACTOR SHALL
PROVIDE AND INSTALL AS APPROVED BY SUPPLIER.



CONTROL STRUCTURE & PROFILE

SCALE: 1" = 10' HORIZ. & VERT.

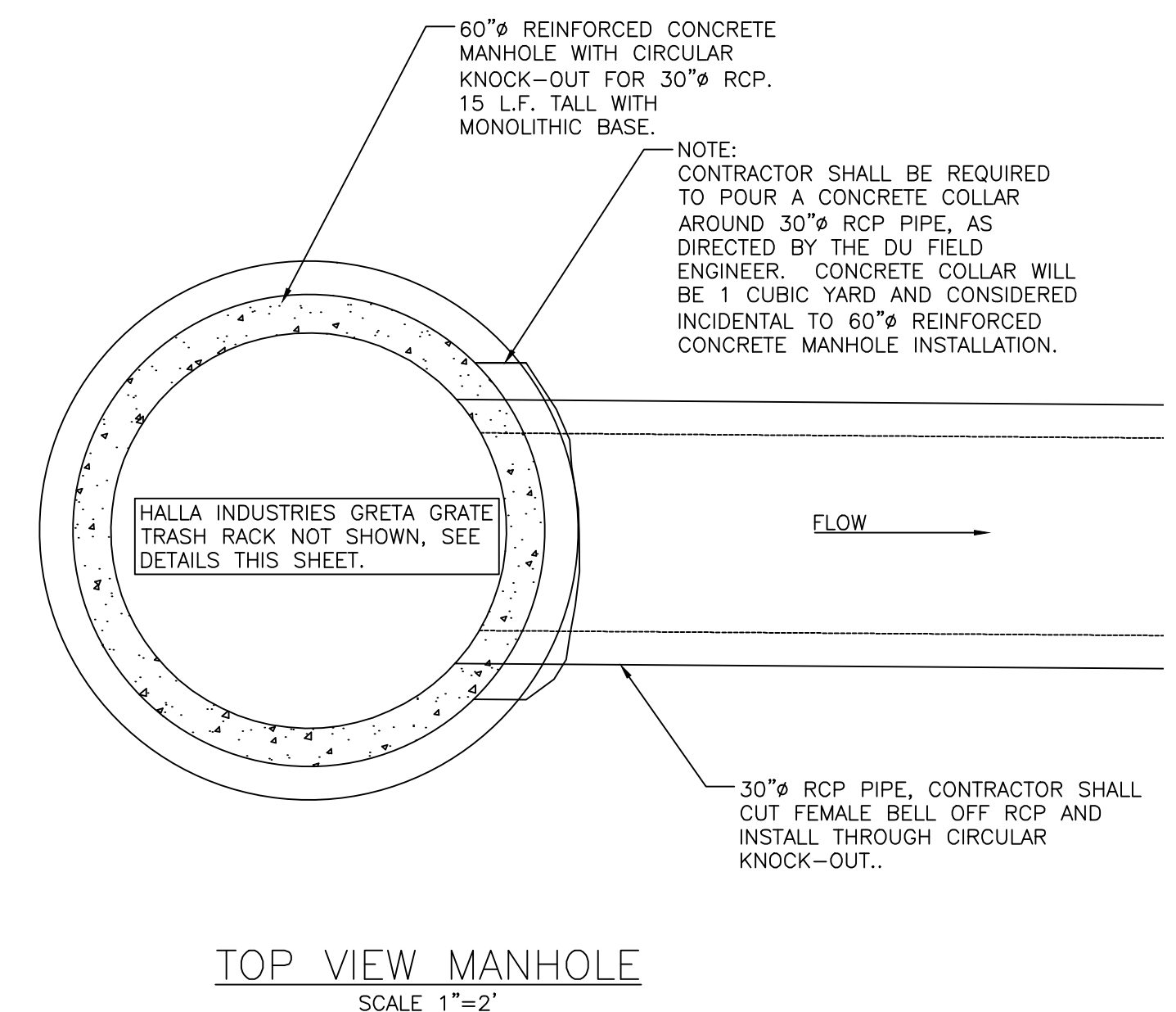
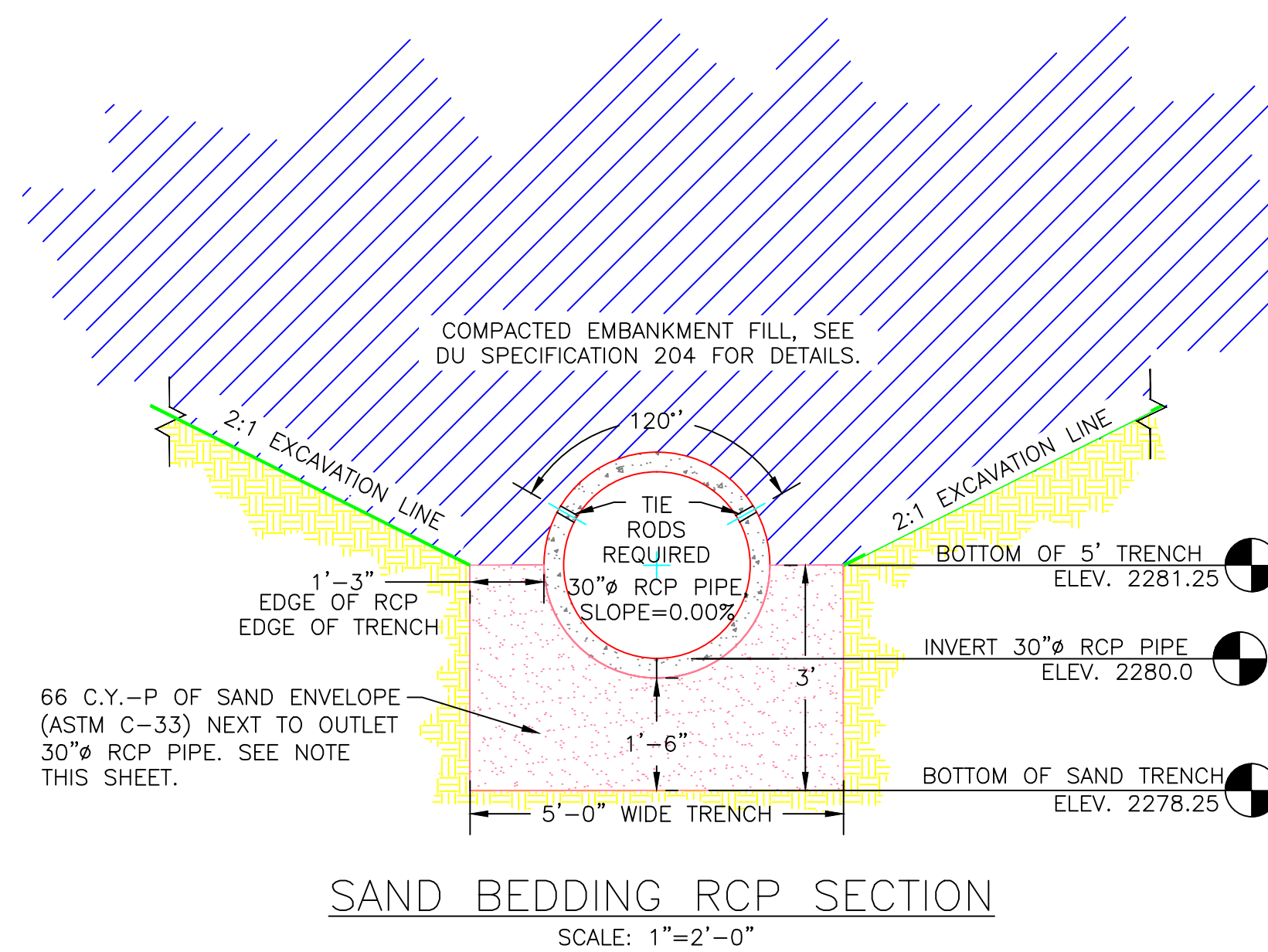
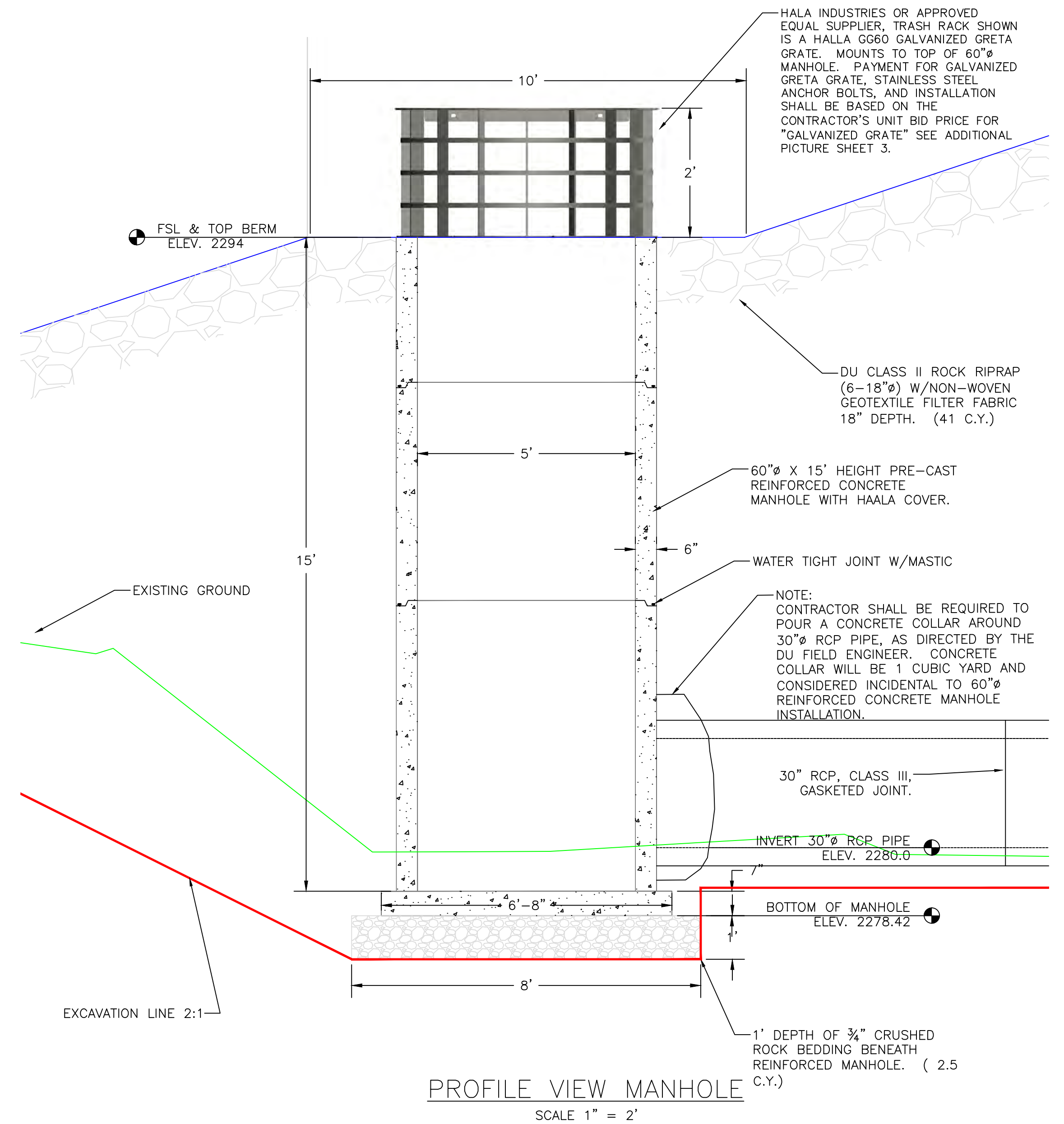
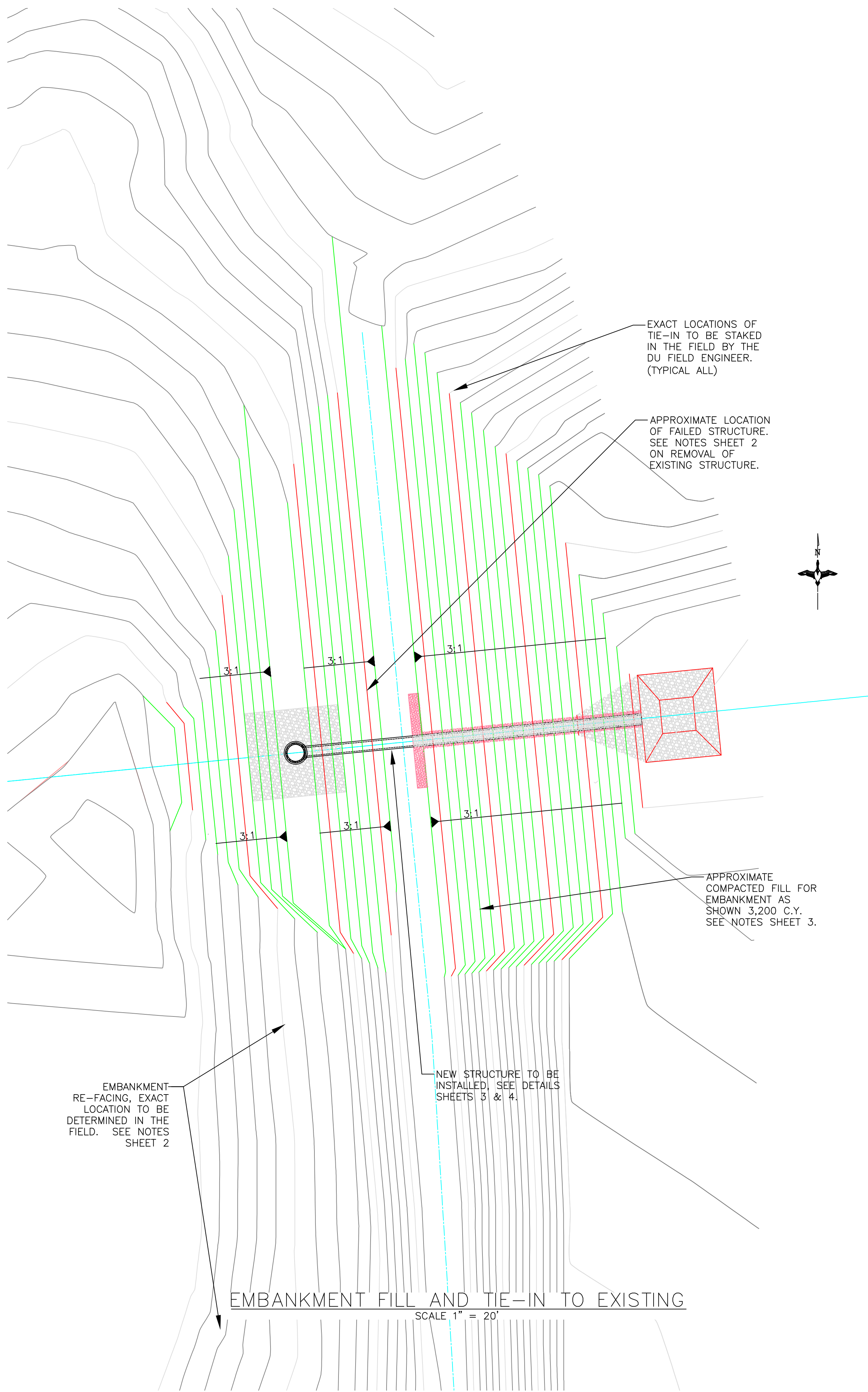
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Revision Number	Sheet Number	Revisions	Date	By



DUCKS
UNLIMITED
INC.
GREAT PLAINS REGIONAL OFFICE
DATE: 01/03/2013
SHEET NO. 3 OF 4

PROJECT NO. MT 147-1	DESIGNED BY: RCS
SCHILLINGER WETLAND PLAN AND PROFILE RCP PIPELINE	DRAWN BY: DRW
	SURVEYED BY: TRE
	CHECKED BY: .
APPROVED BY:	APPROVED BY:



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Revision Number	Sheet Number	Revisions	Date	By

DUCKS UNLIMITED INC.
GREAT PLAINS REGIONAL OFFICE
DATE: 01/03/2013
SHEET NO. 4 OF 4

PROJECT NO. MT 147-1
SCHILLINGER WETLAND
NEW CONTOUR TIE-IN, PIPE
SECTION AND MANHOLE DETAILS
DESIGNED BY: RCS
DRAWN BY: DRW
SURVEYED BY: TRE
CHECKED BY: .
APPROVED BY: .